

1 **Amendment to the Abstract of the Disclosure**

2 **In the Abstract of the Disclosure:**

3 On Page 25, the Abstract of the Disclosure should be replaced in its entirety with the  
4 following (note that the full text of the replacement paragraph is shown with markings to show all the  
5 changes relative to the previous version of the paragraph, with the text of any added subject matter  
6 shown by underlining the added text, and the text of any deleted matter shown by strike-through):  
7

8 An illumination system for increasing a light signal from an object passing through a  
9 reflection cavity. The reflection cavity is ~~disposed between~~ defined by spaced-apart, opposed first  
10 and second surfaces disposed on opposite sides of a ~~moving stream of objects~~ central volume.  
11 Preferably the first reflecting surface forms an acute angle with the second reflecting surface. ~~A light~~  
12 ~~collection system is disposed substantially orthogonal to a plane passing through the surfaces and the~~  
13 ~~stream so as to collect light that is scattered from or emitted by the objects as they pass through a~~  
14 ~~field of view disposed between the first and second surfaces. A beam of light from a laser source is~~  
15 ~~directed through the stream of moving objects in a direction nearly orthogonal to the stream (but~~  
16 ~~slightly inclined) and lying in the plane that extends through the surfaces and the stream. Due to the~~  
17 ~~reflection angle and the distance between the stream and the first surface, the point at which the light~~  
18 ~~reflected from the first surface intersects the stream on a second pass is displaced from where it~~  
19 ~~passed through the stream on its initial pass. The~~ A beam of light is directed into the reflection cavity  
20 so that light is reflected back and forth between the first and second surfaces a plurality of times,  
21 illuminating a different portion of the ~~field of view~~ central volume with each pass until, having  
22 ranged over the ~~field of view~~ central volume, the light exits the reflection cavity. The "recycling" of  
23 the light beam in this manner substantially improves the SNR ~~of the detection system by increasing~~  
24 ~~an average illumination intensity experienced by the objects in the stream~~ signal to noise ratio of a  
25 detection system used in conjunction with the reflection cavity by increasing an average illumination  
26 intensity in the central volume.  
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